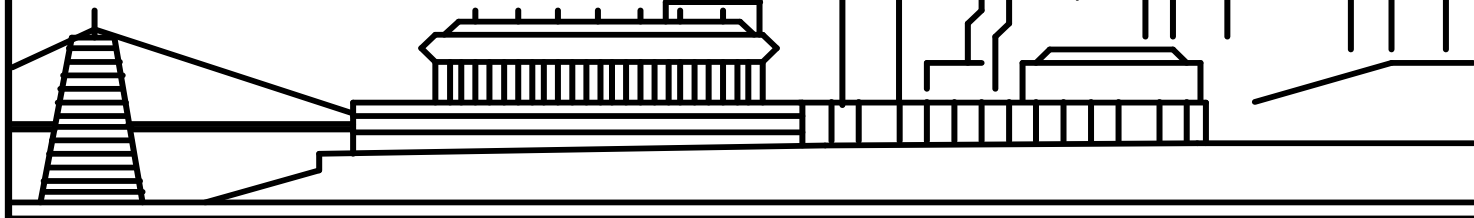




**INSTITUTE OF
ELECTRICAL &
ELECTRONICS
ENGINEERS, INC.**



MARCH 1994

IEEE CINCINNATI SECTION NEWSLETTER

MARCH MEETING: Quantum Device Engineering

DATE: THURSDAY, MARCH 24, 1994

PLACE: Institute of Advanced Manufacturing Sciences (IAMS)

TIME: 5:30 Social Time
6:00 Dinner
7:00 Program
8:00 Adjourn

COST: \$7.00 Members
\$3.00 Students
\$9.00 Non-Members

Reservations are required for dinner only!

Please call DEE SCOTT at

459-8038 by NOON, Wed. March 23rd.

Please provide NAME, MEMBER # and COMPANY NAME when making reservations

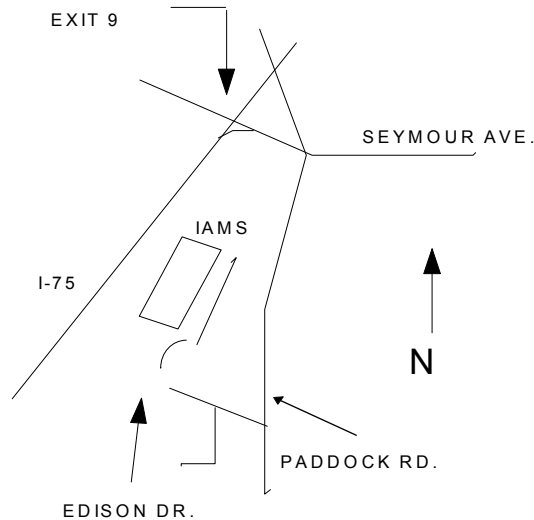
ABOUT THE PRESENTATION

This presentation by Dr. Peter B. Kosel of the Department of Electrical and Computer Engineering at the University of Cincinnati will address aspects of design, processing and characterization of advanced semiconductor materials for quantum devices. A three-day short course was coordinated by Dr. Kosel at The University of Cincinnati on September 13- 15, 1993 on this subject. (See the September 1993 issue of this Newsletter for a description of this short course).

BACKGROUND OF THE SPEAKER

Peter B. Kosel (Ph.D. University of New South Wales) is professor of Electrical and Computer Engineering at the University of Cincinnati. His research interests include fabrication and modeling of GaAs devices, process modeling and MOCVD growth of III-V compound semi-conductor materials. He has held the posts of Supervisor of the Integrated Circuits Laboratory at the University of New South Wales, Australia, and the URRP Associateship with Wright Laboratories, Wright-Patterson Air Force Base.

MAP TO IAMS



CHAIRMAN'S MESSAGE

by Jim Everly

The program for this month features Dr. Peter Kosel of the Department of Electric and Computer Engineering at U.C. Last September, Dr. Kosel coordinated a 3-day professional development course in Quantum Device Engineering at the University. This month's strongly technical program features Dr. Kosel's research in this area and I encourage your attendance.

By now most of us are aware that engineering employment practices are changing. In the past, companies hired permanent employees for their engineering staffs. Today the industry trend is toward downsizing, short-term planning, and hiring temporary employees. Companies often consider hiring consultants to write proposals and solve technical problems. The number of self-employed engineers among IEEE members has grown rapidly in the past ten years. So what is IEEE doing for its members?

As early as 1991, IEEE-USA sponsored a Private Practitioners Task Force which offers encouragement and help to local Sections interested in starting their own consultants groups. By the end of 1993 the task force had received responses from nearly 1000 IEEE members and had organized 19 IEEE consultants networks.

The Alliance of IEEE Consultants Networks has established a formidable set of objectives at the national level coupled with significant action at the Section level. The picture that emerges most frequently is that of a typical network of approximately 50 members who meet monthly, offer guest speakers, publish a newsletter and maintain a directory of members and their specialties. In addition, most groups operate a client referral service for their members.

Consultants networks are very popular in California where many engineers have been forced to consider self-employment. For example, IEEE members in Orange County have formed working groups and subnetworks in specialized consulting concentrations including forensic engineering, telecommunications, government contracts, patents-trademarks-copyrights, and marketing.

Are IEEE members in the Cincinnati area interested in consulting? Should we start a local consultants network? The IEEE-USA Office in Washington, D.C. offers a copy of "How to Start a Local Consultants Network",

together with a list of Consultants Networks in our region. If you are interested give me a call. If I receive enough inquiries I will place this issue on the agenda of the April Executive Committee.

As always, if you have any suggestions or comments give us a call. Our telephone numbers are listed on the back cover of the Newsletter.

FM RADIO BROADCASTING

By R. J. Reiman, Historian

FM or frequency modulation, differs from AM or amplitude modulation, in that the frequency, rather than the amplitude is varied or modulated in accordance with the audio signal being transmitted. FM consists of both narrow-band and wideband types. Narrow-band systems are used for radio-telephone communications, and wide-band, which requires high-fidelity sound reproduction for broadcasting.

Edwin H. Armstrong, born in New York City in 1890, became an inventive genius in the field of broadcasting and conceived of the regenerative receiver circuit while still an undergraduate at Columbia University, and obtained a patent in 1913 for his invention. Unfortunately, this was bitterly disputed by Lee DeForest, Irving Langmuir, and Meissner, and the debate dragged on until 1934 when the United States Supreme Court decided in DeForest's favor. Armstrong, highly embittered, offered to return the IRE's medal he had received from the Institute for this invention. Many of the radio engineers believed that the honor belonged to him.

During World War I, Armstrong entered the Army as a Signal Corps Officer and invented the superhetrodyne circuit to improve communications systems, an activity only indirectly related to his official duties. His patent application for this invention was challenged, but successfully withstood, and the patent was granted on June 8, 1920. His sale of the invention to Westinghouse, and a later invention of an improved regenerative circuit to RCA, made him wealthy. He met his wife, Secretary to David Sarnoff, during visits to discuss this invention.

The culmination of his career as an inventor came with his development of FM. He received a patent for FM in the early 1930's, but again bitter patent battles were to follow, this time with his old friend, David Sarnoff.

FM's advantages over AM included virtual freedom from atmospheric interference, arcing power lines and electrical appliances, greater immunity to interference from stations broadcasting at the same frequency, and the capability for higher fidelity reproduction. Armstrong became a missionary for FM, risked and lost his fortune in his battle with the substantial AM interests, mainly Sarnoff, and ended his life on January 31, 1954 as a concluding act over the bitter conflict over FM broadcasting.

The battle for FM became a battle over allocation of the VHF range (88 to 108 MHz) to television and the idea of quality radio transmission with FM superior to AM. Television was still in the experimental stage, but David Sarnoff staked RCA's fortunes on TV and opposed Armstrong and allocation of VHF to Armstrong's FM. It became a personal battle between Sarnoff and Armstrong, and RCA finally conceded that Armstrong had invented FM, in a settlement to his estate long after his death.

WELCOME TO NEW IEEE MEMBERS AND

CURRENT IEEE MEMBERS WHO HAVE MOVED INTO THE SECTION:

The following individuals are new IEEE members in the Cincinnati Section:

Donald W. Bowling
Ronald R. Burns
R. W. Crewson

Steven E. Muir
Richard J. Pennavaria
Jack D. Peters

John A. Donaldson	John E. Rathburn
Timothy F. Doniere	Lanny D. Saunders
Steven E. Friebele	Lawrence E. Schloemer
W. Scott Gaines	Anthony J. Servizzi
Shankar Jayaraman	Michael Spicer
Dimitrije Jovic	Vincent E. Stenger
Ramanand Mandayam	Edward T. Wallace

The following are existing IEEE members, who have moved into the Cincinnati Section:

L. Chandrasekar	Ali A. Minai
Simon N. Chen	Michael T. Purpura
David L. Dresel	Alok Sarwal
Daniel J. Halloran	Lawrence W. Schindler
Elisabeth A. Marley	Raymond R. White
Sid Martin	

A sincere welcome to you all!!!

IEEE NEWS

IEEE-USA INTRODUCES NEW JOB REFERRAL SERVICE

IEEE-USA is offering members and their families a new, inexpensive job referral service in conjunction with JOB BANK USA, one of the nation's premier employment data base companies. Their Career Advancement Service brings employment assistance into the Information Age, by combining the speed and efficiency of a state-of-the-art computerized data base with a large client base of employers throughout the nation.

To use the service, an IEEE member submits a one page enrollment form and up to two current resumes, creating a personalized electronic career record that is stored in the data base. When client companies ask JOB BANK USA to fill open positions, its computer scans all electronic career records to identify qualified individuals. If a member is identified as a potential candidate, JOB BANK USA will call to see if the individual is interested in the position. If so, it will forward a copy of the member's original resume directly to the employer. The entire referral process takes only 48 hours to complete.

Among the benefits to IEEE members, the Career Advancement Service offers maintenance of the personalized electronic record for a full year; a newsletter; a toll-free telephone number for updates and changes to the record during the year; and unlimited referrals to JOB BANK USA company clients.

For more information and a Career Advancement Service enrollment form, call JOB BANK USA toll-free at 1-800-296-1872, and indicate IEEE affiliation. Until March 31, 1994, IEEE members and members of their families can enroll at an introductory rate of only \$27.00 -- 65% less than the non-member price of \$75.00. After March 31, IEEE members will be eligible for a special, but slightly higher, rate.

WHAT IF MY ADDRESS CHANGES ?

If you should have a change of address, please send a change of address card to IEEE, 445 Hoes Ln., PO Box 1331, Piscataway, NJ 08855-1331 or call (800) 687-IEEE. This information is also on the back of your IEEE membership card.

Dee Scott (call for meeting reservations)	385-9446
Jim Everly - Chairman	777-7129 (Home)
	556-4224 (Fax)
	556-4241 (Office)
Steve Olenick - Vice Chairman	573-6555
Orest Melnyk - Treasurer	565-2549
Mark Reineck - Secretary	753-6290
Bob Morrison - Editor	287-3697 (Office); 287-3698 (Fax)

MARCH 1994

IEEE CINCINNATI SECTION NEWSLETTER



**The Institute of Electrical and
Electronics Engineers, Inc.
C/O Dee Scott
7780 Hackney Circle
Maineville, Ohio 45039**

DATED MATERIAL
Please deliver promptly